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What's in the Future for Agriculture?

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OUR COVER:

The future of agriculture has always been a mystery. No matter what trends farmers, economists, or government observers foresee, no one is sure what tomorrow may bring. A crystal ball seems to be as good an indicator of the future as any other method we now use.

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PHOTO AND ART CREDITS

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Behind the Editor's Desk

Farmers are sadistic. They love to hear about the troubles of each other and when they get together they all have a good cry.

Farmers have pictured themselves on the short-end of the stick for so long that they don't know how to act when things begin to improve, so they do what they've always done—complain.

Nobody likes a complainer. Whenever one complains too much he has a tendency to ostracize himself from the people he needs most.

Granted. Farmers until recently were getting the proverbial shaft, but complaints today are not as justified as they once were.

Last summer I talked to a farmer who was selling half of his breeding sows and lamented that "costs are so high it is difficult to keep feeding them."

To listen to him made one think he was down to his last buck and I felt sorry for him until I learned that he had contracted his feed protein a year ahead and was returning over two dollars for every dollar invested. He was selling his sows because he was getting old and did not want to manage so many.

While farmers find complaining somewhat amusing, a housewife dishing out $1.50 for a pound of sirloin may not.

We should put our handkerchiefs away and let people know what's good with agriculture today . Yes, business is good and we should not have to be afraid to admit it. Let people know agriculture is a big and powerful part of this nation—a necessary part—and not the "Aw shucks—Hee Haw" image we imply.

Today's agriculture deserves more than it's getting, we all know that, but we will not improve conditions by crying on each others shoulder.

Head

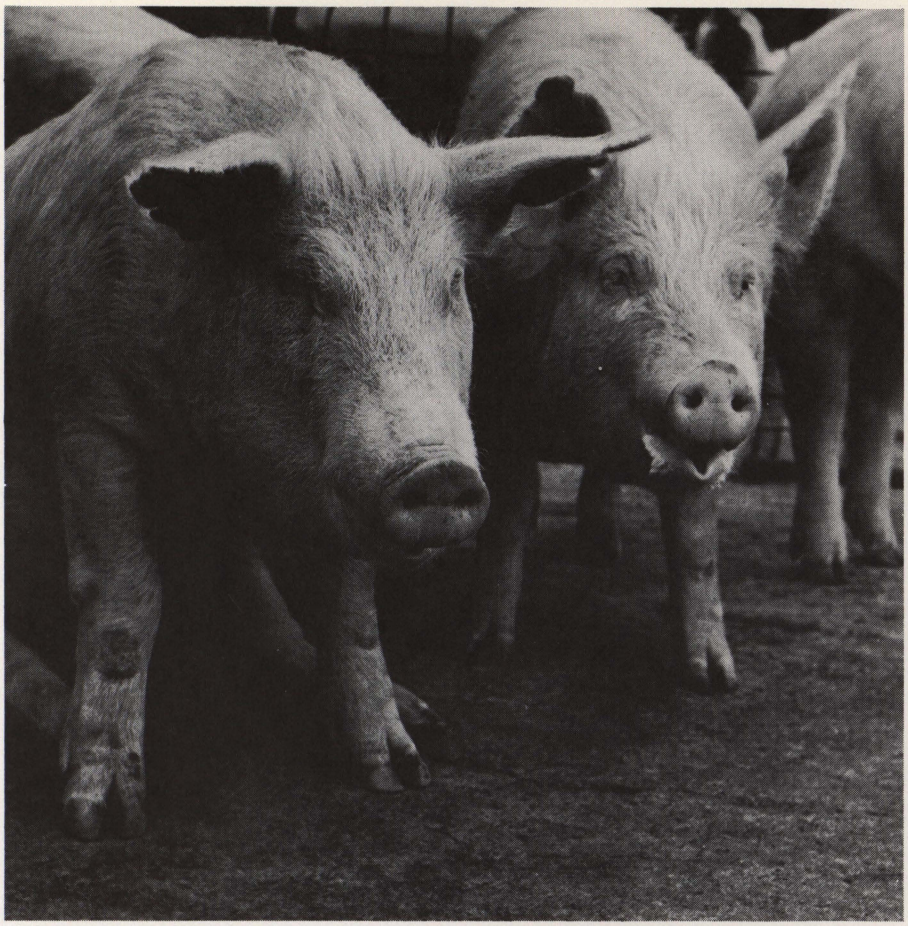
The *Agriculturist* would like to hear your comments concerning our publication. We realize there is always room for improvement and we are interested in your likes and dislikes.

The *Iowa Agriculturist* is written and assembled by students for the men in the College of Agriculture at Iowa State. Your fees finance our publication and as editors we want to make the *Agriculturist* worth the time and expense put into it.

Anyone can help. If you cannot spare the time, let us know what you would like to see in the *Agriculturist* and we will try to accommodate you.

Stop by the *Agriculturist* office at 126 Press or phone us at 294-2037. Our personal phone numbers are; Jim Head, 294-6307, Lynn Henderson, 292-5445.

We will be waiting to hear from you.



New Image for Pork

by Gary Wall

Consumers are now getting "just what the doctor ordered" when they buy today's pork. More lean meat with a high protein content combined with less fat and, thus, fewer calories, makes pork an ideal food for weight watchers.

Today's modern pig must have size, scale and a good frame to be a quality product. Present trends in the pork industry indicate that the market weight for the hog of tomorrow will probably be somewhere around 260 lb., which enables the pig to be marketed over a wider range of weights.

"We need a longer, bigger framed pig to correct some of the problems we have gotten into with the smaller, muscle-bound stress-prone animals," according to Dr. Lauren Christian, Iowa State swine geneticist. "We must make the pig later maturing so that only 70 per cent of his skeletal development is complete at 200 lb. rather than the 90 per cent figure most often quoted."

The fat hog of 20 years ago has now been displaced with a hardier, "natural" shaped animal that is deeper ribbed, looser hided and stouter. Al Christian, swine herdsman at Iowa State said, "Bone size seems to be quite important. Sound, strong, heavy-boned animals that can withstand the rigors of confinement and the stress in the breeding and farrowing pens are obviously of economic importance."

Selection of breeding stock possessing these traits was at an all-time high at the recent National Barrow Show in Austin, Minnesota—hearlded as the "World Series of Swine Shows."

Breeders analyzed and compared the size of boars' head and tail, the dimension of its bone, the width between his eyes and even the width and depth of its jaw in their attempt to find the indicators of big framed, heavy-skeletoned breeding animals.

Choice breeding animals at the show brought record bids of over $38,000. One firm from Japan spent $230,400 for prize-winning boars and gilts.

The cost of improving the pork carcass has paid off to the pork producer. Packaging and processing innovations resulting in improved cured. and smoked sausage products for the consumer have driven the demand higher for pork, Dr. Robert Rust, Iowa State extension meat specialist, said.

Pork appears to be increasing in popularity when contrasted to the 1950's and 60's when pork consumption decreased slightly, according to ISU extension economist Dr. Gene Futrell. He said in 5 to 10 years there is a "good chance" that per capita consumption of pork will be near or a little higher than the present. Population trends and consumption rates projected for 1980 indicate a ten per cent increase in pork needs.

"Pork is better now than ever," according to the National Pork Producers Council. A ten per cent increase in the amount of lean meat has been accompanied by a 26 per cent decrease in the amount of fat and lard.

In the time between 1959-1973, lard produced per 100 lb. of live hog has been slashed from 14 per cent to 11 per cent. Production of pork per hog has increased over 30 lb. and shows that with careful breeding, producers can raise more pork per hog.

In spite of all the research conducted on pork, many homemakers still consider pork to be fat, wasty, hard to digest, and a food to be avoided in warm weather. They aren't properly educated.

Phrases such as: eating high on the hog, bringing home the bacon, and hogs are beautiful, illustrate the importance of swine and the impact pork has on our people and our culture.

The Corn Plant of Tomorrow

by Marty Maher

Corn plants of the future may have qualities we now think impossible, according to Dr. James J. Mock, Assistant Professor of plant breeding at Iowa State University.

Corn with a population density of 64,000 plants per acre planted by April 1 are just two of the future traits we may see, he said.

Dr. Mock foresees a corn plant that is more efficient at absorbing solar energy and converting it to grain. "There are several ways that greater utilization of solar energy can be accomplished, among these are earlier planting, higher plant populations, and altering the physical aspects of the plant," Mock said.

One of the things plant breeders are working on is population tolerance. According to Dr. Mock, the goal of population tolerance is to be able to plant high populations in narrow rows to intercept 95 per cent of the sunlight. When we have high populations we must contend with barrenness. Barrenness is not an insolvable problem, it can be overcome because there are five morphological traits which decrease barrenness at high populations, he added.

"The most important traits affecting barrenness are getting all the plants in a variety to silk at the same time and having the plants silk at the time pollen is shed," said Dr. Mock. With the varieties we are using now, silking occurs over a rather long period of time. Our current varieties also silk after part of the pollen is shed.

According to Dr. Mock, barrenness can also be decreased by breeding ear proliferacy into the corn plant. Using a plant with erect leaves which will produce better at high populations and having a smaller tassel on the plant is another trait.

Dr. Mock said he believes "the smaller tassel will lessen the effect of apical dominance in which the tip of a plant has control of the whole plant and is able to draw nutrients and water to itself. Under high

Corn plants with erect leaves on top and flat leaves on the bottom would allow more light to be intercepted at a greater plant population density.

populations the nutrients and water bypass the ears and go to the tassel.''

With a smaller tassel, there would be less competition between the tassel and the ears for the water and nutrients, he said. Once barrenness becomes less of a factor, populations of 64,000 plants per acre may be common.

Another aspect of the future corn plant is moving the flowering and grain filling period back to early summer when the periods of daylight are longer. This would allow for greater photosynthesis to occur and thus produce more grain, said Dr. Mock. If this happens, the corn plant will be flowering and filling grain from mid June to August 1 instead of our current dates of mid July to late August.

If corn is to flower this early, it will be necessary to plant about April 1, said Dr. Mock. This presents another problem, namely that of germination and growth.

''It is a well known fact that the earlier corn is planted the more it yields, yet with our current corn varieties we have problems getting the corn to germinate and grow at this early date,'' he said. New varieties are being developed that will not be affected by the cool weather of early Spring. These varieties will be able to withstand temperatures of 10 to 12 degrees centigrade and can be planted in the same time period as oats.

Dr. Mock said that tests have been run on early planted corn with the results being greater yields per plant for corn planted April 6, as compared to May 6. Currently the problem with the April 6 planting is with reduced plant stand. It necessitates the planting of 32,000 kernels per acre in order to have a similar stand of 16,000 kernels planted May 6.

The major goal of all the work with the corn plant, according to Dr. Mock, is to enable it to absorb more solar energy and transfer it to grain. This is done with the correct leaf orientation.

By selecting plants which have erect leaves as in the picture, and flat leaves on the bottom, this would intercept a great amount of light. With a plant of this nature, the erect leaves intercept all the light they can use and would permit light to strike the flat leaves allowing them to conduct photosynthesis also. On a plant of this type, the ears would be located between the erect leaves and the flat leaves.

While the physical nature of the corn plant is changing, the corn kernel is not at a stand-still. We are now seeing some of the advancements in corn quality that may be common in the future.

One of the major things that have been worked on in the corn kernel is lysine content. This is because lysine is an amino acid which must be added to livestock diets and corn is very low in this.

Breeding for lysine is not something new. It was known many years ago that opaque-2 gene improved protein quality by improving lysine content. Now other genes in the corn kernel are receiving attention; both new genes that have just been discovered and genes that have been around for many years.

According to Dr. Peter Loesch, Professor of Agronomy at Iowa State, two genes that have been revived are opaque-2 and floury-2, but neither of these genes has proved satisfactory by itself. These characteristically have lower kernel density, reduced test weight, significantly lower grain yield, and higher moisture content at harvest.

These genes also are less resistant to diseases and insects, and have increased susceptibility to mechanical damage at harvest.

Because of these traits, corn possessing either of these genes has not been acceptable yet. He also added that these problems will be worked out before any commercial seed company attempts to sell opaque-2 corn.

''Opaque-2 by itself, improves protein quality by raising lysine content, but does it at the expense of quantity,'' said Dr. Loesch.

One of the new genes which is very promising according to Dr. Loesch, is sugary-2. By itself it is not satisfactory, but when combined with opaque-2, the resulting kernel is highly digestible, has good kernel quality, contains large amounts of lysine and tryptophane, and is expected to have a yield comparable to normal corn, said Dr. Loesch.

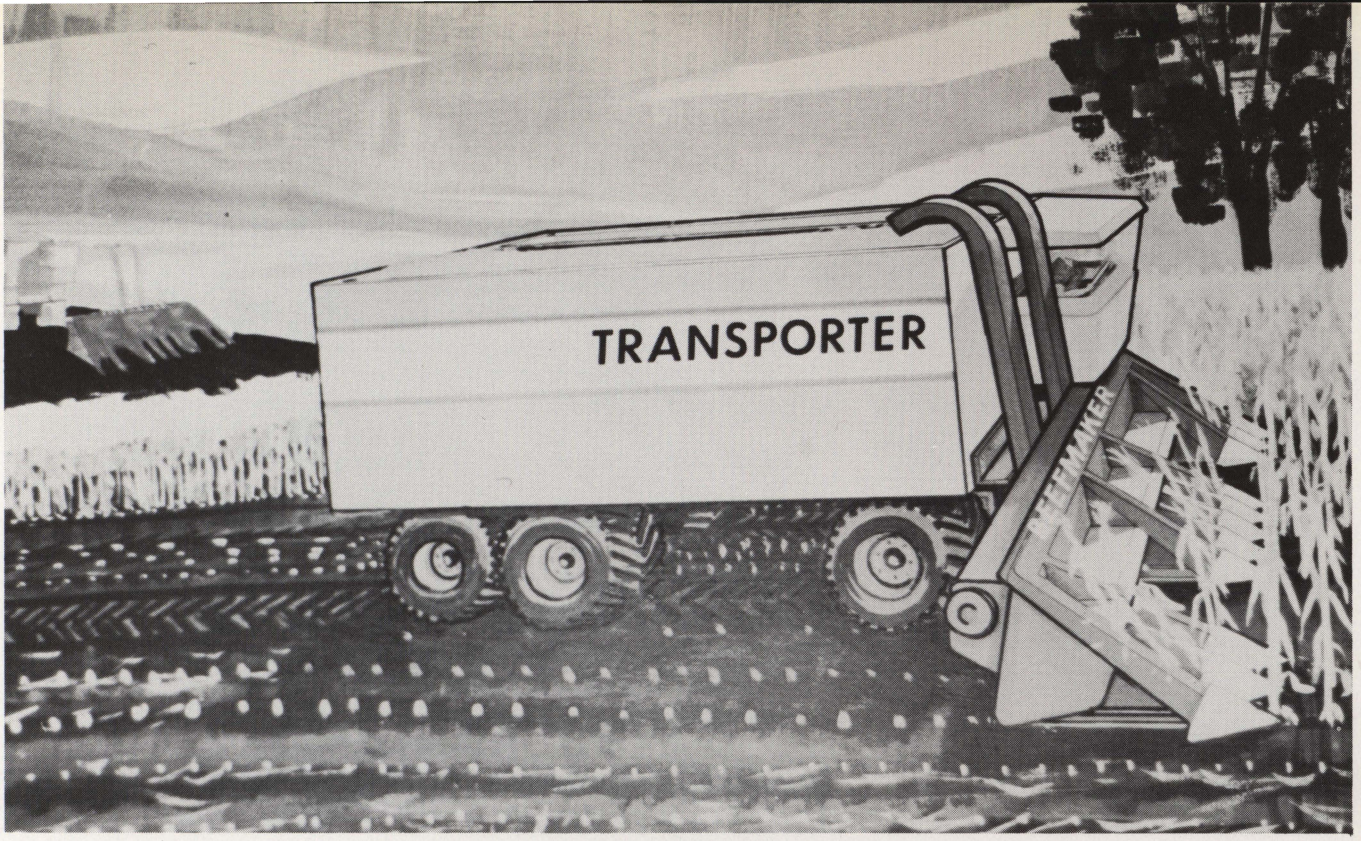
Tryptophane is another amino acid that is low in corn grain but required in animal diets. He said he believes that the sugary-2 and opaque-2 combination may be the corn of the future.

In the meantime till this happens, opaque-2 will take over because of the current hog and soybean meal prices. ''If these prices change, it could push opaque-2 into the background,'' claims Dr. Loesch.

Another type of corn that may be important in the future is waxy corn. According to Dr. Loesch, early data on waxy indicated as much as a 10 per cent improvement in gain of livestock due to waxy. This is not because of its protein quality, but merely that waxy is highly digestible. He also added that yields for waxy were comparable to our current varieties of corn.

(Continued on Page 25)

Tomorrow's corn will put less energy into stock growth, yielding two ears rather than one ear as common today.



Tomorrow's farmer will use a "prime mover" such as the Transporter with accessory attachments to complete his farming operations.

The Tools of Tomorrow's Agriculture

by Jim Head

Farm equipment will change as much in the next thirty years as it has changed since the turn of the century, according to Dr. Wesley Buchele, Professor of power and machinery in the Agriculture Engineering department at Iowa State University.

Machinery development in the future will lead the change in farming practices rather than follow it, he said.

The farmer is basically a trucker, said Buchele. He is either unloading something from his equipment onto the field or loading something onto the equipment from the field. Tractors with towed or mounted machinery and specialized self-propelled machines will give way to a universal "prime mover," he explained.

The "Transporter"

A prime mover is one machine using accessory attachments to complete a series of farming operations rather than using a different piece of machinery for each job, said Buchele.

The "Transporter," a prime mover designed by Buchele, would include such features as six-wheeled drive of large, all-terrain tires, self-unloading boxes, an adjustable-position control cab, and an automatic hitching system for attaching accessory machines to the vehicle.

"A prime mover such as the Transporter would enable farmers to utilize the soil in a more efficient and economical manner without lowering the quality of his environment," said Buchele.

The "Beefmaker"

When the "Beefmaker," an accessory harvesting tool is attached to the Transporter, it will simultaneously harvest shelled corn and plantlage and deposit them individually into self-unloading boxes located side by side explained Buchele.

When the Transporter is loaded, it can automatically uncouple from the harvesting attachment and haul the forage to a silo and the high-moisture corn to storage bins, he said. The machine can also be used to pack the silage, Buchele added.

Storing grain at high-moisture content eliminates the energy expense needed for drying, grinding or wetting the grain, said Buchele.

Buchele said research completed by the department of Animal Science at ISU has shown that wet corn has a five per cent higher feeding efficiency than dry corn fed to beef cattle. "It costs money to dry corn and it also costs money to recondition corn to get greater feeding efficiency."

In his design of the Beefmaker, Buchele has included extra spacing between wheel rows for the high flotation, all-weather tires of the Transporter.

Buchele explained that the major energy expense when preparing today's soil is eliminating wheel compaction. "Every year we pick up tracks and lay them down again," Buchele said.

The Transporter would travel over the same tracks every year in "controlled traffic farming," eliminating unnecessary compacting," said Buchele.

While conventional farming compacts one-third or more of a field, the Transporter, traveling over the same roadbed every year would compact only one-fifth of the field, Buchele said.

The "Ridge Runner"

Among other conservation practices, Buchele's "21st Century Farming" incorporates the use of ridge planting.

The ridge-planting system provides for management of crop residues and minimizes the loss of soil by wind and water erosion and also minimizes farming costs, said Buchele. "Since every row is planted on a ridge, every row is a terrace and every furrow is a terrace channel."

Buchele said ridge-planting cuts soil losses to less than one-sixth of the soil lost in conventional flat-planted rows on the same slope.

The ridge rows would be constructed by a Transporter attachment called the "Ridge Runner," said Buchele.

The Ridge Runner consists of a flail-type stalk shredder and a closely coupled, tool-bar mounted disk-tiller and subsoiler, Buchele said.

It's purpose would be to deepen the furrows and increase the height of the ridges in the fall so that there would be tall, strong ridges standing at planting time, said Buchele.

Tile-Outlet Terraces

In addition to building ridges as a means for soil conservation, field topography would be further modified by the construction of terraces, installation of drainage systems, and by land forming, said Buchele.

After the row direction and equipment size has been selected, a tile-outlet terrace system would be constructed on steep slopes as needed to control water and soil runoff, Buchele said.

Buchele explained that the terraces would be constructed by pushing soil up from the downslope side, parallel to other terraces, and with a spacing of even multiples of the planting and cultivating equipment.

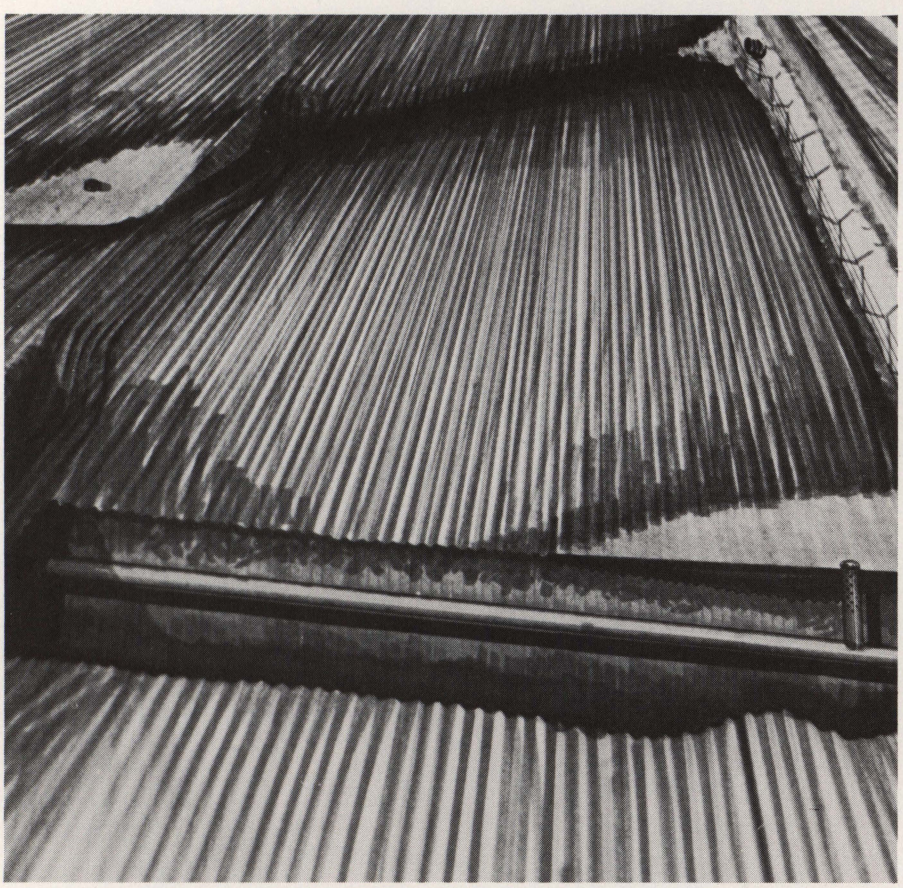
The terraces would be drained by raised, perofrated stand-pipe inlets that would lead to an underground tile, Buchele said. The protruding stand-pipes would be placed exactly to width of the tillage equipment used from the top of the terrace to prevent any obstructions for the Transporter, Buchele added.

On land with low slopes, tile-outlet terraces would be built on top of the ground only across gullies and ancient waterways, Buchele said.

Tile-outlet terraces catch excess sediment-laden water flowing during a rainfall, Buchele explained. "The soil settles and the water flows into the tile outlets, leveling the area between terraces and increasing the farmability of the land."

Studies from the U.S. Department of Agriculture have shown that 95 per cent of soil runoff is captured by tile-outlet systems with little crop loss occuring while the water is impounded, Buchele said.

"With tile-outlet terracing and ridge-row planting, soil losses from the field could be as low as 1/120 of that lost from conventional farming without conservation practices, Buchele said. "Soil lost last year would not be lost in the next hundred with future planning," he added.



To avoid short-rows and frequent turns, a tile-outlet terrace system would be constructed to control water and soil runoff. The terraces would be drained by raised, perforated stand-pipe inlets that would lead to an underground tile.

The "Loader"

As winter approached and the silage stored in the trench silo is needed, the "Loader" would be attached to the Transporter for silage removal.

The Transporter with the Loader attachment is driven into the tranch silo to dig the silage loose from the stack and elevate it into the forage box of the Transporter, said Buchele.

The other compartment of the Transporter would be filled with grain and supplement, Buchele said. Automatic weighing equipment would indicate the amount of feed in each box, he added.

Full of grain and silage, the Transporter would empty its contents also along fence-line bunks, Buchele said. "Automatic metering from unloading boxes on the side of the Transporter would regulate the ratio of grain to silage as desired," he said.

The "Disposer"

After feeding the animal, the next problem that arises is waste disposal, said Buchele. "For every 20 pounds of feed material a cow takes in, over 80 pounds come out. The cow," said Buchele, "is a manure producing machine."

The Disposer could load self-load liquid, semi-liquid, or solid manure either by a front mounted lot sweeper or by a vacuum pump located in the Disposer tank, Buchele said.

The wastes would be deposited into subsoiler slots made by the subsoiler attachment on the Disposer, he added.

Buchele said forcing manure deep into subsoiler slots of the furrows prevents water and air pollution.

Because of waste build-up, the Disposer would have to be used the year round, Buchele said.

In order for the Disposer to be used in winter, the disposal field would have to be completely subsoiled below the frost line before freeze-up, Buchele said.

"Since the manure would be placed below the frost line, the water in the manure can be absorbed in unfrozen soil, and new loads of waste can be applied weekly to the area," Buchele explained.

The Disposer would travel on the same permanent paths as the Transporter, he added.

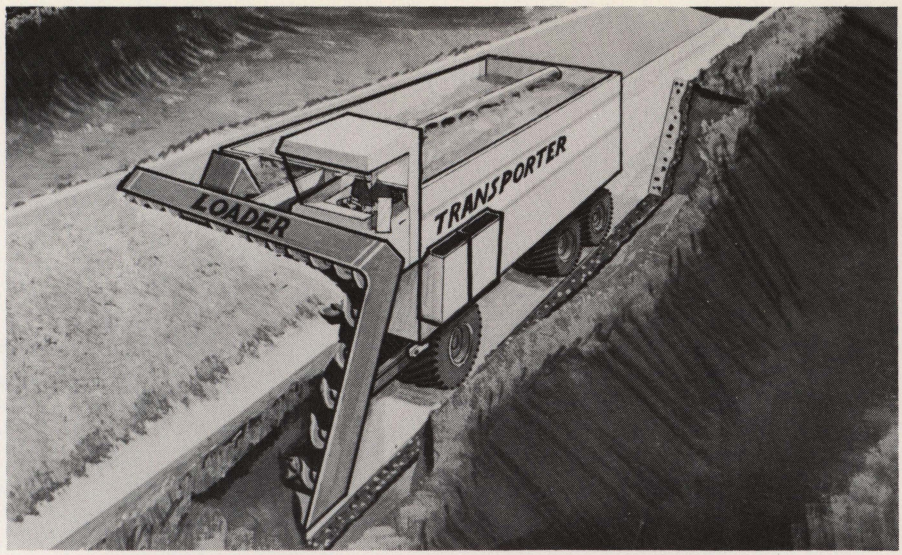
The "Grower"

As spring approached, the Ridge Runner would be used once more to complete rebuilding ridges, adding fertilizer or pesticides, and would be followed by the "Grower," Buchele said.

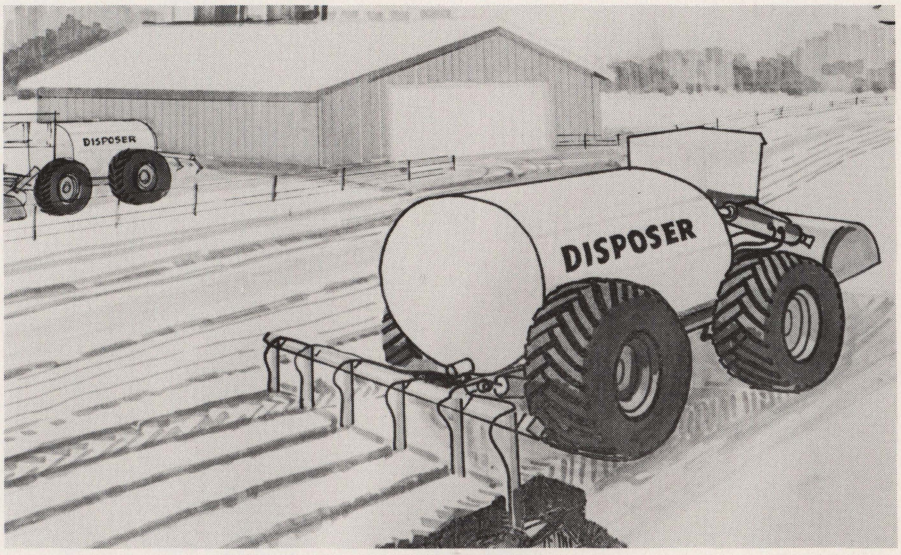
The Grower would apply fertilizer in the side of the ridge and would plant crops on top of the ridge, he said. "The ridge would be surfaced tilled at the time of planting to kill weeds and to incorporate pesticides," Buchele added.

"The concept I have created for the 21st Century farmer will not be just for the large producer," said Buchele. "The farmer will need less equipment, will have less compaction, and will use less energy," he said.

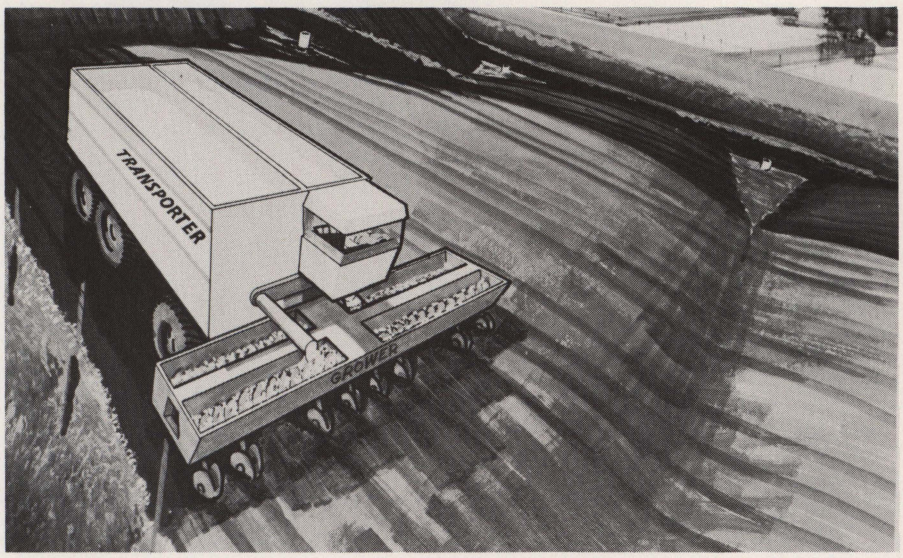
"A small farmer will be able to run his farm as efficiently as anyone else and will do exactly what his machinery will let him do—no more—maybe less."



The Loader



The Disposer



The Grower

Acupuncture:
New Hope for Ailing Animals

by Dave Knau

Tony Wheeler has been working with acupuncture for animals as a new concept in veterinary medicine. He is using a "mapping meter" which measures resistance to a low electrical current on various points of the skin into which needles may be inserted.

Though the Chinese have practiced acupuncture for over 1,000 years, Americans are just beginning to recognize its potential in medicine. In addition to its noted benefits for man, research is being conducted at Iowa State for acupuncture's use for animals.

Tony Wheeler, Iowa State graduate student of biochemistry, is working to establish acupuncture as a vital concept of animal and veterinary medicine.

Wheeler explained that acupuncture was developed in China as a result of social necessity. "In the teachings of Confucius and Tauism, the ancient Chinese were not permitted to open the bodies of their dead for fear spirits would be released. Their concept of human anatomy was hindered, forcing them to limit their medical practices to the outside surface of the patient."

"I know there is something solid behind acupuncture, Wheeler said. "I've seen it work on a number of people and I've had it work on myself."

Wheeler said he sometimes treats himself for headaches by inserting the acupuncture needles into his hand. "I've also treated muscle disorders and other ailments with positive results," he added.

But don't expect your veterinarian to drive in tomorrow, take out some long thin needles and cure all your livestock of whatever ails them. There is a lot of work yet to be done, Wheeler admits, but he says he is confident he is on the right track.

Wheeler has recently been joined in his acupuncture research by Sally Fonda, first year pre-vet and Beth Wood, who is completing her second

year of veterinarian studies at Iowa State.

"I hope to treat things like scours in young calves, porcine stress syndrome (PSS) in hogs, and maybe even tissue-hardening ethlosclerosis," he said.

"We think we already know some of the points on the animals to treat calves for scours and PSS in pork and can get immediate results," he said.

At the present time Wheeler is involved in mapping a goat for various treatments. In a trip to the Orient last summer, Wheeler managed to obtain some maps of various animals such as the pig and the cow showing various levels and points of resistance on their anatomies. Only one problem right now . . . most of the maps are written in Chinese. Wheeler said he is slowly getting them translated.

Wheeler calls his equipment "basically simple." Included are needles, some of them he made himself out of fine wire and some purchased in the Orient, and a special mapping meter which he made himself. The device, he explained, is simply a probe and a meter which measures resistance in different points on the skin.

Wheeler said one of his goals with acupuncture is total anesthesia. Present procedures with surgical anesthesia involve long recovery times with dangerous side effects to both humans and animals, he said.

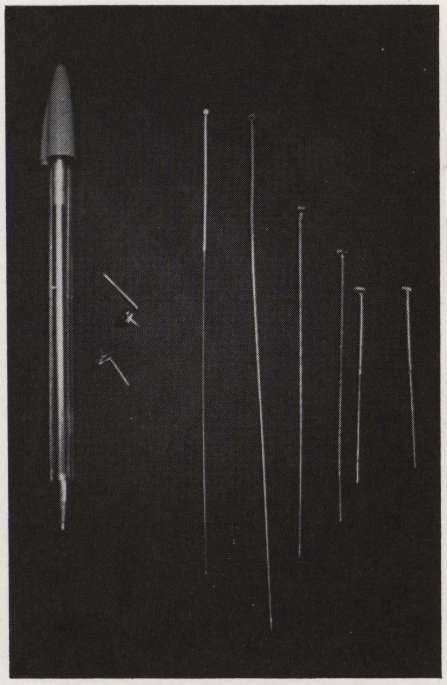
Animals are not as tolerant to anestheisa as humans are and can die more easily, Wheeler said. "They have no reaction from acupuncture needles and suffer less chance of shock."

Wheeler said the greatest danger of using acupuncture is from hepatitis "and that can be treated or prevented."

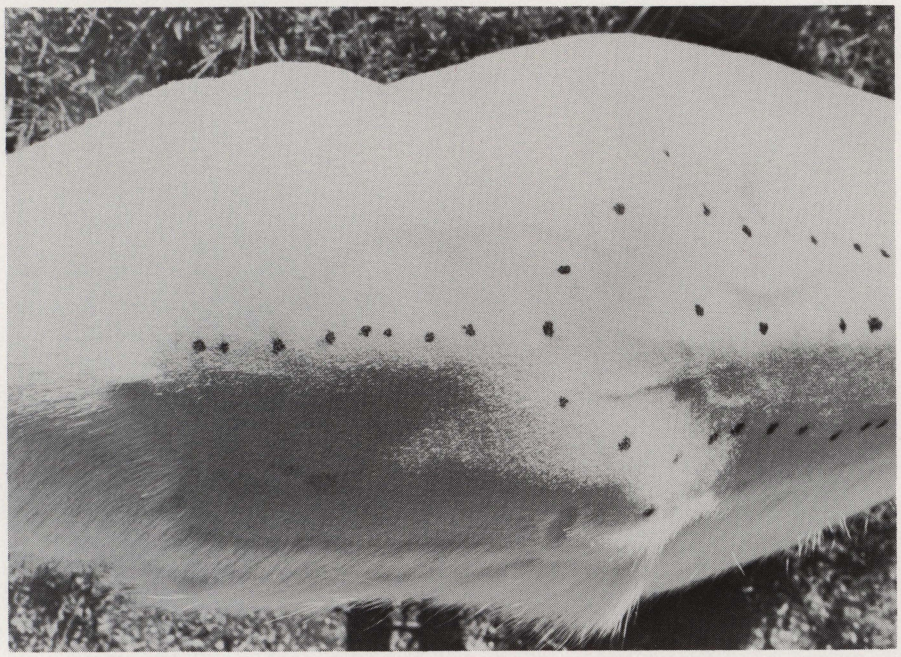
Wheeler thinks the future of acupuncture in animal medicine is similar to applications in human medicine.

"I'd say that it could provide whole new areas just like it could in human medicine," he said. "It could provide cures that are difficult to administer under normal conditions because of the size of the animal."

Wheeler doesn't talk much at this point about reactions from veterinarians. He said he wants more solid scientific information on acupuncture techniques before he makes any kind of formal approach.



Each needle Wheeler uses is .025 of an inch thick made of spring steel wrapped in copper. The needles from left are: implant needles to be used for extended periods, Ceasarean section needle, lumbar region needle used for deep implants, and general anesthesia needles.



Wheeler is presently mapping the goat to find points of low resistance. Once a point is found, the point is marked and recorded. Wheeler hopes to cure scours, constipation, PSS, and other ailments in animals using acupuncture.

Dr. Lee Kolmer, new Dean of Agriculture, said he is optimistic about the future of agriculture. He said farmers may now take an offensive position concerning prices and income position.

Dean Views Future in Agriculture

by Dave Drennan

"I can't help but be optimistic about the future of agriculture in the next ten to 20 years," said Dr. Lee R. Kolmer, new dean of the College of Agriculture at Iowa State.

Kolmer said farmers for many years have led from a defensive position because of the relatively low prices and income position of agriculture. "But under present conditions farmers can lead from a position of strength," he said. Kolmer said the farmer's position is stronger because of the increased demand and higher prices for farm output.

Kolmer, 45, was associated with Iowa State as a student and staff member for 18 years before becoming associate dean of the School of Agriculture and director of the Cooperative Extension Service at Oregon State University in March, 1971.

Kolmer's appointment as dean of the College of Agriculture was approved by the State Board of

Regents October 19, 1972. He succeeds the late Floyd Andre who had held the position for more than 22 years.

As dean of agriculture, Kolmer also serves as director of the Agriculture and Home Economics Experiment Station and professor of economics.

Kolmer said farmers and consumers should not fight over high food prices. "Farmers should have equity and profit sure, but they must also think of city people," Kolmer said. "People in the East don't understand all our problems but people in the Midwest don't always understand the problems of a person in the East who's making $7,500 a year and rearing four children." Kolmer said neither side can completely comprehend the other side's problems.

A real issue before us now is "who will control agriculture in the future," Kolmer said. Referring to whether family farms or larger operations would control agriculture, Kolmer said the issue might be decided in the next decade.

If family farm numbers continue to decline, rural businesses would suffer along with schools and churches which are centers of rural communities depending upon the family way of life, Kolmer said.

"Present levels of agricultural income are very attractive to companies with capital and management," Kolmer said.

As capital replaces labor, there may be fewer farms in the rural areas and therefore fewer families, he said. "Businessmen are worrying whether large operators would continue to deal with the small towns for their supplies and credit.

"I don't know what will happen, but I think the family farm has the best chance of surviving in the Midwest because of the existing numbers right now and the nature of the agriculture," he said. Kolmer said better than 20 percent of last spring quarter's graduating class went back to the farm compared to five percent in previous years which may indicate a new reverse farm migration trend.

"The College of Agriculture at Iowa State has been changing since it was started," Kolmer commented. He said the college has been adjusting to keep up with the needs of a constantly changing agricultural industry.

Right now Iowa State needs a new meat lab, an improved seed lab facility, and renovated horticulture greenhouses, said Kolmer. "I'm optimistic about these improvements being completed and I know the administration is aware of our needs," he said. Funds are difficult to obtain so we will have to wait for some of these improvements."

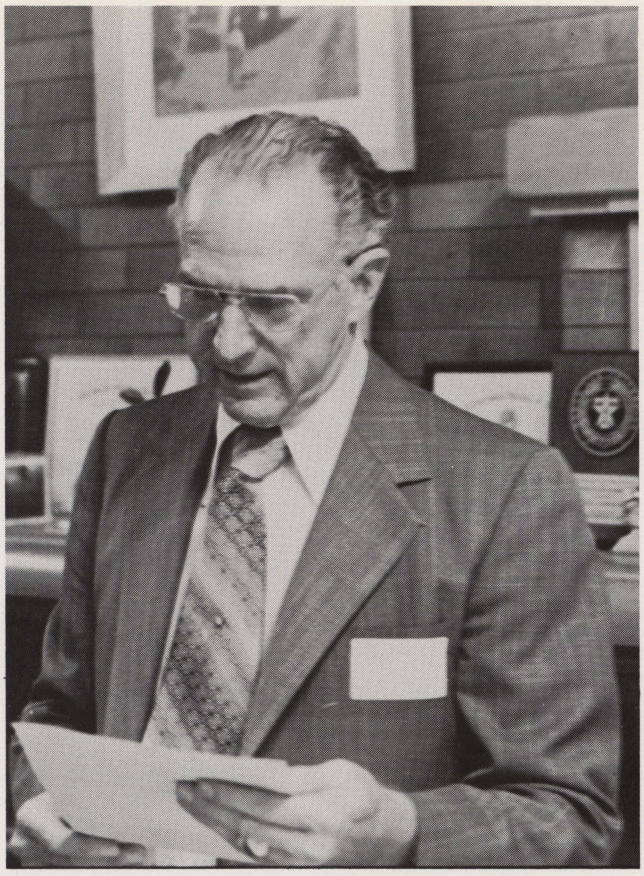
"Research has started on many new programs to better prepare students of agriculture for the future such as a pest management program," said Kolmer. "There are three major methods of controlling pests; cultural, biological and chemical controls," he said. "The pest management program is an integrated program that doesn't rely solely upon chemical control."

Kolmer said he can help to make changes, but everyone in the College of Agruculture must provide leadership. "Every staff member and student in the College of Agriculture has the responsibility for this leadership."

Dean Kolmer said farmers and consumers should not fight over high food prices. "Farmers should have equity," he said, "but they should also think if the problems of non-farm consumers."

Farm Production Nearing Limits

by Lynn Henderson



Dr. Louis Thompson says farmers will be able to produce enough food only if population growth is curbed.

After graduating from Iowa State in 1973, Dan Shore decided to return home and farm with his dad. Their production scheme is simple: 480 acres of corn, 120 acres of soybeans, 300 head of feeder cattle and 1,100 hogs.

Shore and his father are part of the new breed of producers whose production is not limited to United States consumers. Instead, international markets now play a significant role in their farm income.

What brought Dan Shore and other U.S. farmers like him into the world markets? Lester R. Brown, a senior fellow of the Overseas Development Council credits it to two basic reasons: increasing population and income.

Brown says, "Population growth is the dominant cause. Expanding at nearly two per cent per year, world population will double in little more than a generation. Therefore, merely maintaining current per capita consumption levels will require doubling food production over the next generation."

Increasing income also increases the per capita grain requirements, Brown says. "The amount of grain consumed directly rises until per capita income reaches $500 per year, then declines. The total amount of grain consumed directly and indirectly, however, continues to rise rapidly as per capita income climbs."

In recent years, industrial regions such as Scandinavia, Western and Eastern Europe, the Soviet Union and Japan have emerged as the primary importers of American farm products.

According to Brown, "As incomes continue to rise in this group of countries (which contain almost a billion people), a sizable share of the additional income is being converted into demand for livestock products."

However, most of these countries lack the resources to completely supply the growing demand for animal products. Because of this, they are importing increasing amounts of livestock, soybeans and feed grains. This year alone, the U.S. exported nearly 20 per cent of its 5 billion bushel corn crop, 66 per cent of its 700 million bushel soybean crop and 85 per cent of its wheat crop to these nations.

How long will the U.S. be able to produce enough food to supply its world markets, as well as its own expanding population when even now resource scarcities stare farmers in the face?

Livestock products are important sources of protein, but attempts to increase their supply have run into many problems.

Dr. Louis M. Thompson, associate dean of the College of Agriculture, at Iowa State, says even though hogs are grain consuming animals and "must compete with man for grain and protein, there has been a surprisingly large increase (40.7 per cent) in world hog numbers since the 1960-64 period.

"If there should be a shortage of grain," Thompson continues, "hog numbers would drop before cattle numbers since cattle are roughage consumers."

Increasing the supply of beef has problems of its own. First, scientists have not been able to devise any commercially usable means of getting more than one calf per cow per year. In other words, for every beef animal fed out, an adult animal must be fed and maintained for a full year.

The other problem is that the grazing capacity of much of the world's pasture land is almost fully utilized, Brown says. "This is true, for example, in the U.S. Great Plains, in East Africa and in parts of Australia. Most of the industrial countries in which beef consumption is expanding rapidly, from Ireland to the Soviet Union and Japan, are unable to meet the demand from their own resources. Either some beef or feed grains and soybeans beeded to produce beef, must be imported."

Another important source of protein are grains and legume seeds. Cereals provide 52 per cent of man's food energy supply if consumed directly, according to Brown. Protein consumed indirectly in the form of livestock products such as meat, milk, eggs, fats and oils, provide much of the rest.

Thompson says, "It takes about five times as much grain and legume seeds to supply animal products as food than man consuming grain directly as a source of energy. Therefore, as population pressure on the land for food increases, less grain will be used for livestock feed and more grain will be used for human consumption."

According to U.S. Department of Agriculture statistics, the U.S. produces two-thirds of the world's soybean crop, and supplies more than 90 per cent of all soybeans entering the world market. Yet, soybean yields per acre have increased by only 1 per cent every year since 1950 while corn production has increased nearly 4 per cent per year per acre.

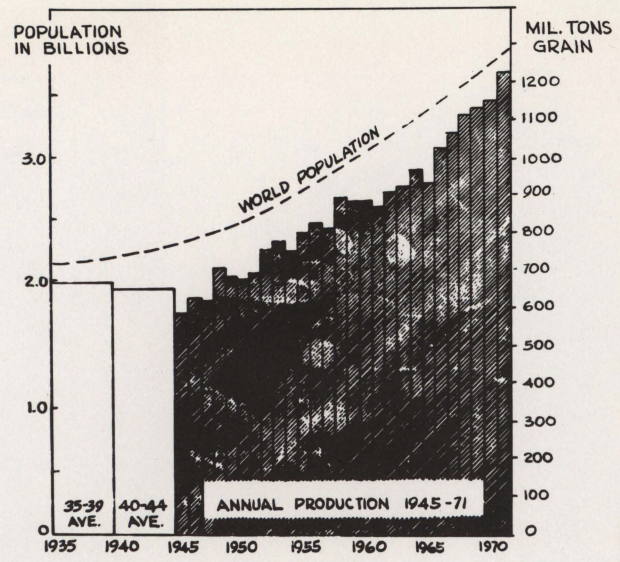
Ken Buhr, an instructor in the agronomy department at Iowa State, says one of the reasons why soybean yields have not climbed very rapidly is because soybeans, being legumes with a built-in nitrogen supply, are not very responsive to nitrogen fertilizer.

In the past, the U.S. increased soybean production by planting more soybean acreage. As long as there was ample idle cropland available, there was no problem. But if this cropland reserve continues to diminish or disappears entirely, serious global supply problems could result.

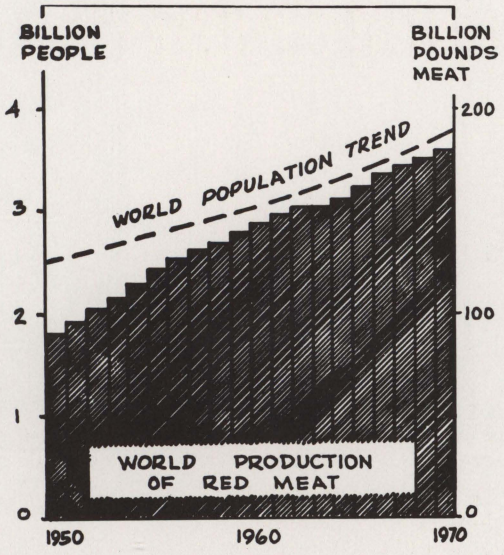
This has a direct bearing on the world's working reserves. As world consumption expands, so should the size of working reserves, but the trend over the past decade has been for reserves to dwindle while consumption climbed, Brown says.

"Over the long run, the key to coping with world food scarcity lies in the developing countries," says Brown. "It is here also that the unused potential for expanding food production is the greatest."

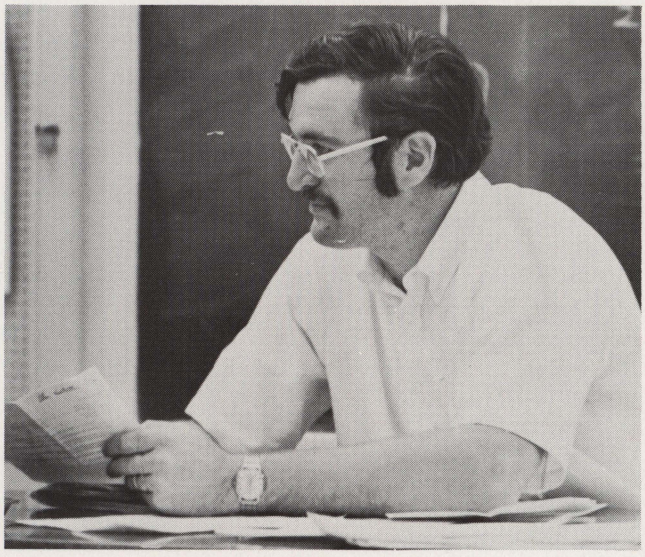
In summation of the situation Thompson says, "Barring calamitous drouth, the world's farmers can meet food needs in the 1970's, but their ability to do so beyond the decade hinges largely on man's willingness to control his population growth."



World Grain Production vs. Population



World Meat Production vs. Population



Buhr said a seriously low soybean supply may result when idle acres are used.

The Decline of Iowa's Poultry

In 1953 Iowa ranked number one in the nation's egg production industry. Now, only 20 years later Iowa has dropped to fourteenth place.

by Rich Balvanz

Iowa's livestock industries have a lot to be proud of. We produce 25 percent of all the hogs marketed in the U.S. Only Texas can compare with the number of cattle raised in the Hawkeye state. Even sheep numbers are high for a midwestern state. But what about poultry?

Twenty years ago Iowa was the biggest egg-producing state in the nation. Around 1953, 97 percent of the farms in Iowa had egg laying flocks, usually of less than 500 hens. It was not long after that when California took over the number one position, followed by Iowa in second place.

By the early 1960's, Georgia had taken over the number two spot, and Iowa egg production continued to lose ground to the point where the state ranked near fourteenth place in overall egg production in the United States.

Reasons for Decrease

Russell Wells, Executive Secretary of the Iowa Poultry Association, says the primary reason for the decreased production was the fact that while Iowa formerly was an egg production center, over 80 percent of the eggs produced were shipped to the east and west coasts.

Egg handling and storage was a big problem to most producers, Wells says. During winter, egg storage was fairly easy since they store well in 45 to 55 degree temperatures and the eggs reached the eastern markets in fairly good condition. But in the summer, that was not the case.

Because the eggs were not refrigerated on the farm or in transit, the condition of the eggs was considerably weakened by the time they reached their destination.

Due to quality differences in eggs produced in the midwest and those produced in the east, Wells says the eastern retailers had two classes of eggs, the nearby's and the midwestern eggs. The midwesterns sold for a much lower price because of the poorer quality.

Wells says the supermarket form of food distribution also brought a change in Iowa's poultry industry. He says the big food retailers demanded large quantities of

The poultry industry will never again be for the small farmer. Ten egg producers in California have over one million layers apiece.

consistently high-quality eggs year-round. And Iowa-produced eggs simply could not fill the bill.

And to top it all off, just a few years ago there was a period of 22 months when egg prices were below production costs. Iowa farmers do not like to lose money, so laying flocks turned into chicken on the table.

But is just so happened that in the Southeast quite a large number of broiler producing facilities, which had earlier gone by the financial wayside, were looking for a new enterprise. So they took over the problem of egg production.

Many of these large facilities could handle up to 50,000 layers, so they could afford to use modern cold storage techniques to preserve the freshness and quality of the eggs. Consumers could buy fresh eggs in their supermarkets all year-round.

Iowa Farmers Quit

One outgrowth of increased egg production in the east, Wells says, was the advent of the two-priced egg marketing system in the Midwest. Egg prices are quoted either as ''incentive'' priced eggs or ''other'' priced eggs.

The incentive quality eggs are those produced under conditions where the quality can be maintained until retail sale can take place. The ''others'' are just what they say they are; all eggs which are not handled for quality consistency.

Wells conceded that rather than produce eggs for a low price, most Iowa farmers quit the business and moved to more profitable farming enterprises.

Wells says supermarkets now dominate the entire egg marketing system, including procurement, retailing and even some production.

Given the current situation, Wells says he is certain the industry will never revert to the smaller flocks of two decades ago. Rather, he predicts that the size of laying flocks will continue to increase.

To support his opinion he cited ten egg producing companies in California which have over one million layers each. In fact, one company is now estimated to have between three and four million layers in production.

Wells also predicted that egg production areas will continue to segregate, either near the large consumer markets or in the grain production areas.

Wells says the future for egg production in the Midwest is very good because the family farm offers an economic initiative for production. He says commerical producers face the problem of regular payrolls, whether egg prices are favorable or not. The poultry official also cited the Midwest's abundant feed grain supply as another factor contributing to the Midwest's favorable atmosphere for egg production.

Iowa's egg producers recently approved an egg check-off program to promote the poultry industry in Iowa. Under the terms of the check-off referendum, up to five cents for every 30-dozen crate of eggs may be deducted for promotion work.

A full five cent deduction would produce about $200,000 per year for industry promotion. However, each egg producer has the option of whether or not he wants to participate in the check-off program. So, Wells says he expects the program to produce somewhere in the range of $120,000 per year.

1973 Outlook

Smaller production and strong demand have resulted in much higher prices for Iowa eggs this year, according to an Iowa State University extension economist. Gene Futrell forecasts that prospects are good for relatively strong prices continuing over the next twelve months.

Early October prices for Iowa Grade A Large eggs under quality and volume incentive arrangements were 54 to 58 cents per dozen, about 30 cents above a year earlier.

''Higher feed costs have reduced potential profit gains form these higher egg prices, but returns are much better than in 1971-72,'' Futrell says.

The ISU economist says part of the reason for the current high prices stems back to unfavorable prices in 1971 and most of 1972.

He said rising feed costs encouraged heavier culling from flocks through the first seven months of this year, further reducing layer numbers.

The economist said with a smaller laying flock and little change in the rate of the lay per bird, egg production through the first eight months of 1973 was six percent below the previous year. Iowa egg production through August was down eight percent from last year with five percent fewer layers.

Futrell says producers are in the process of rebuilding their production capacity. He noted that available young pullets for flock replacement are up four percent from a year ago and eggs in hatching incubators on September 1 were up 24 percent.

As a result, Futrell predicts egg production should be up to year-earlier levels by January and show moderate increases through the balance of 1974.

USDA's October egg production report said production is beginning to gain, but probably will not catch up with last year's levels until early next year. Egg prices are then expected to remain relatively high well into 1974.

More Bull to You

by Marty Maher

With our growing world population and an increasing demand for protein, farmers may turn to producing bullmeat as an alternative to steers for more efficient conversion of feedstuffs to meat, according to Dr. Paul O. Brackelsberg, Associate Professor of Animal Science at Iowa State University.

Farmers should give more consideration to the feeding of young bulls, said Brackelsberg. They are more efficient at converting feed to meat and they do this at a faster rate than steers, he said.

Citing research completed at Oklahoma State University, Brackelsberg said bulls averaged 0.42 pounds more gain per day than steers and needed 0.72 pounds less feed per pound of gain than steers.

When research was conducted, the feeding costs for a steer gaining from 464 pounds weaning weight to 1250 pounds finished weight was $299. The feed costs of bulls using those same weights was $269, a savings of $30 per head.

When adding this increased feed efficiency of bulls to a 15 per cent faster gain, which means fewer days in the feedlot, a sizable savings for the producer results.

Some people feel that there would be an increased expense for feedlot maintenance when feeding bulls as compared to steers.

According to Brackelsberg, there may be a slight increase in yardage costs, but they would not be very significant.

He claims that if you run bulls with bulls and don't mix different groups of cattle you would have few problems. If the bulls are kept on a high concentrate ration they are not as apt to express libido, and therefore will gain better because of less excitement and activity.

Though bull production seems to have advantages over steers, marketing problems and consumer acceptance must be overcome before bullmeat production becomes widespread.

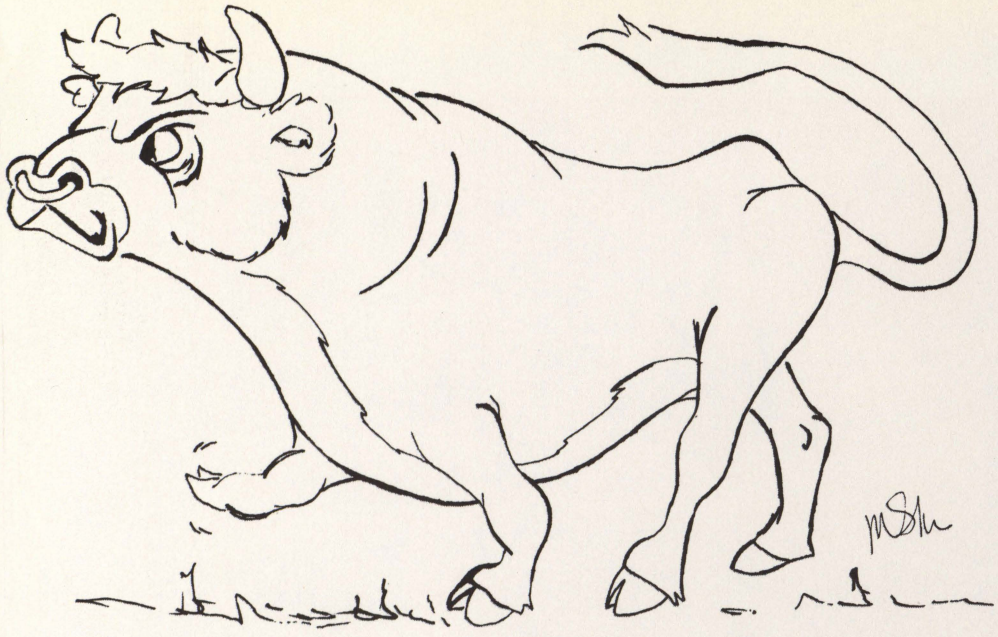
According to Robert E. Rust, extension meat specialist at Iowa State University, the system of grading cattle has been changed to allow young bulls to be graded under the same standard as steers.

Instead of grading young bulls as stags or bulls they are now called bullocks, he said. "Still," said Rust, "no one has tried to merchandise bullmeat commercially because the consumer associates it with the tough meat obtained from old bulls."

Consumers should not be afraid of bullmeat, said Rust. He said research completed on a comparison of meat from young bulls and steer meat revealed that on the average, palatability for both types of meat was similar.

The study also indicated that there was a wider range of palatability between the two types of meat. This means that while the average of the meats were similar, the bullmeat was occasionally less desirable than average, Rust said.

Rust said he does not believe bullmeat will gain the amount of acceptance in the market place that is enjoyed by steer and heifer meat. Likewise, he believes that the name change will not help much in im-



proving the bullmeat market.

Because Rust believes that bullmeat will never establish itself in the market place, he advocates the use of it in the manufactured meat industry. Manufactured meat consists of meat products that have been ground or processed such as sausage, ground beef and frankfurters.

Until now, the only source of this type of meat has been old cows and bulls, commonly called boners. They were used because the meat from these animals is dry and it takes up a great deal of water and the packer can gain tonnage merely be adding water.

As a result of the tremendous increase in manufactured meat products, the increased use of artificial insemination, meaning that fewer farmers are keeping bulls for cow herds than in previous years, and the decrease in dairy cow numbers, there is now a scarcity of lean, boneless meat, said Rust.

The only requirement for manufacturing meat is that the animal has a large carcass and be 90 per cent visible lean meat. With the increased efficiency of gain and rapid amount of gain per day that bulls are capable of, the two requirements for manufactured meat should not be hard to achieve.

"The people of the U.S. consumed over three billion pounds of manufactured meat in 1971," Rust said. "With such a great demand for boner meat we should concentrate on producing bullmeat for this type of market," he added.

Market prices tend to confirm Rust's beliefs. Carcass prices in late September were at $0.68 per pound for choice steers, $0.65 per pound for canner and cutter cows, and $0.75 per pound for old bulls weighing 500 pounds or more. Rust said these prices are indicative of the price trend of these animals for the past several years.

According to Brackelsberg, some packers will attempt to run a few bulls through the slaughter house as steers, but if the grader detects the bulls, "you will be docked." Packers doing this will use a limited number of bulls each week, which leads to a rather slim market, he added.

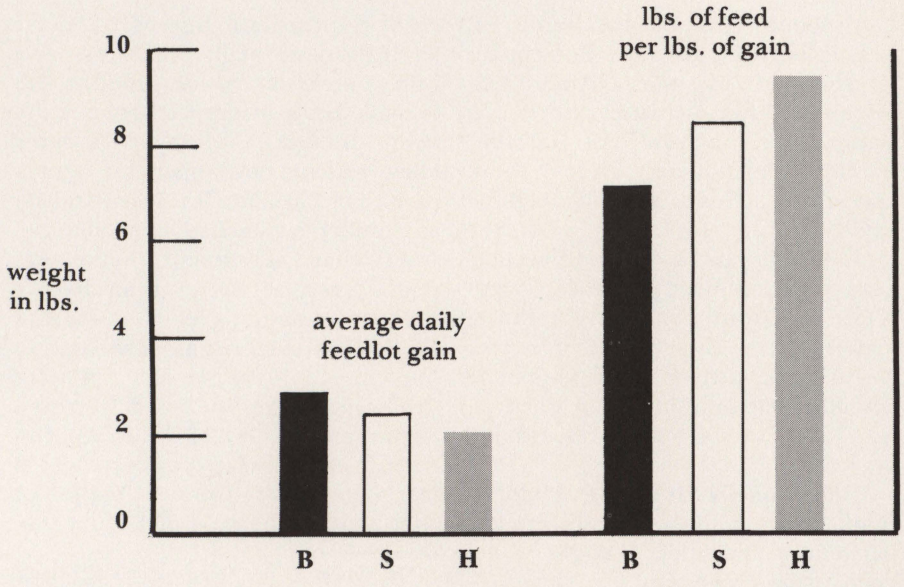
He sees this as the only major place to market young bulls now. Packers will use them as boners, but these packers are not very common, Brackelsberg said. His opinion about raising bulls is that, "Unless you have a firm market outlet for young bulls, it is not a wise venture."

Dr. Brackelsberg does not see a fast growing market for young bullmeat in the near future. The market for a bullock will be hard to establish and the price discount may eat up all of the savings of improved efficiency and rate of gain, he said.

The young bull answers the beef industry's need for a faster growing, leaner animal, but he adds, "It could be years before a significant reputation develops for the bullock."

The widespread use of meat from young bulls seems to be an idea for the future. A few farmers are feeding-out young bullocks for slaughter now, but most of these animals are currently being sold as bulls.

Perhaps when we are faced with a more efficient utilization of feedstuffs by our livestock, the market for bullocks may become prominent.



Average daily feedlot gain and feed efficiency for bulls, steers and heifers.

Horsemeat:
An Alternative to Beef

by Barry Piatt

Although virtually the same as beef in nutritional value, horsemeat is shunned by most Americans because they think there is something "unclean" or inferior about horsemeat, but food specialists at Iowa State University say that is not true.

"There is not so much difference between horsemeat and beef," said Nelle Thompson, Associate Professor in the ISU Food and Nutrition department. "The horse is actually a clean animal and there is no reason why its meat should be unclean.

"Nutritionally speaking I don't think there is too much difference between it and beef. It ought to be good meat," she said.

Professor Tom Wickersham, Extension Animal Science department at Iowa State, agrees.* "As far as the amino acids, proteins, and other nutrients are concerned, there is really little difference between the two. "In fact," he says, "I don't know exactly how much fat horses carry, but I assume it it less than the amount of fat carried by a cow, so from that standpoint horsemeat might even be better than beef."

Many experts agree it is culture that keeps Americans from eating horsemeat. Mark Love, Assistant Professor in the Food and Nutrition department at ISU said the American refusal to eat horsemeat is just a carry-over from a "matter of snobbery on the part of Europeans.

"They saw barbarians who ate horsemeat murder, rape, plunder, and lay their continent to waste" Love explained, "so they refused to eat horsemeat because it was 'barbaric.' I think that's where the whole thing began," he said.

If there was a demand for horsemeat in Iowa there would be few legal obstacles standing in the way of providing the meat.

A few Iowa grocery stores contacted by the *Agriculturist* reported they have had no requests to carry horsemeat as an alternative to beef and if they did get such requests, the meat wouldn't be available as no wholesale meat suppliers in Iowa carry horsemeat.

According to Everett Harts, head of the consumer protection division of the Iowa Department of

*In addition to being a noted sheep specialist at Iowa State, Professor Tom Wickersham also spends much of his time on horse extension programs.

Agriculture, it would not be illegal to sell horsemeat in Iowa.

Harts said that the only problems meat sellers would encounter are ones brought on by mislabeling the meat, or selling it uninspected.

"All meat sold in Iowa has to be inspected," Harts said, "so if stores were going to start selling it, we'd have to arrange some sort of inspection."

Currently there is no program for inspecting horsemeat within the state, said Harts. The last horsemeat packing house in Iowa was located in Spencer and it closed down several years ago. The horsemeat was exported out of the country for human consumption and used domestically in dog food.

The last time horsemeat was sold in Iowa for human consumption, Harts said, was during World War II. However, it was sold as beef, or mixed in with beef.

"If horsemeat were to be sold in the state again, we'd make sure that there would be no chance of the consumer being fooled," said Harts. "It would have to be clearly labeled as horsemeat, and we might even have to arrange some type of separate display provisions in the law."

At first glance it looks like the human consumption of horsemeat has a lot to offer. Those who have eaten it claim that it is quite tasty and certain breeds of horses are capable of being great meat producers.

In Oregon, where horsemeat is sold for human consumption, it sells for considerably less than beef.

Last spring beef tenderloins sold for $2.98 a pound in Oregon while at the same time, the most expensive horsemeat cut, horse tenderloin, was selling for 95 cents a pound. Yet, even with these prices, there are reasons to believe that horsemeat may not be the answer to high meat prices.

The meat which is being sold in Oregon is taken from wild horses. Thus the price is artificially low, since the cost of raising the animal and maintaining a breeding herd is eliminated.

Wickersham said if those costs were included, it would be impossible to maintain those low prices.

"Horses have only a 50 to 60 per cent reproduction rate while with cattle you can expect a 90 per cent reproduction efficiency," said Wickersham.

"Last year we bred 11 mares and we were hoping for as many foals, but only four were born," Wickersham said. "Part of our trouble was a disease problem which was an unusual circumstance," Wickersham added.

Besides being less prolific than cattle, horses are slower to mature than cattle, Wickersham said. To the farmer who is paying the bills for raising the animal, this presents a serious problem.

The bills come in while the animal is maturing, whether it is productive or not. "We have to wait until the mare is about three years old before she can be bred," Wickersham said. "For those three years you have some pretty high costs while the horse is not really producing anything."

After the horse is bred, the gestation period is 11 months, Wickersham said, and that does not compare too favorably with the 9 month gestation period in cattle, which can breed at 15 months of age, or pigs which can farrow 2 to 2.5 times a year and deliver 8 to ten pigs a litter.

Wickersham estimates that it costs roughly 50 per cent more to maintain a gestating horse in the same amount of time it takes to raise a cow in pregnancy.

"Take a 1,000 pound beef cow and you have to feed her 8 to 10 pounds of hay a day, and then make up the rest with 16 to 18 pounds of material that is mostly costless, said Wickersham.

With a 1,000 pound mare, you have to feed over 20 pounds of hay and about 6 pounds of grain a day. The feed requirements for a horse are appreciably higher, and you have to supply them with feed of higher quality for a longer time," Wickersham said.

Wickersham agreed that there is no nutritional reason for not eating horsemeat. "It's a psychological thing," said Wickersham. "More people attend horse events than all the football and baseball events in the country," he said.

"People like horses because they make good companions and respond to training and care," said Wickersham. "People just aren't going to eat horses unless meat becomes a lot more unavailable than it is now."

"People just aren't going to eat horses unless meat becomes a lot more unavailable than it is now."

Aggies in Action

The Gerald Johnson family of Stratford has been selected the Iowa Farmers Home Administration Farm Family of the Year. The Johnsons were previously selected FHA Farm Family from the Clarion FHA office, followed by their selection as representative from the North Central District.

The Johnson family was selected first, over entries from 51 other county FHA offices. They have three children, who are all involved in 4-H and youth activities.

E. P. Sylwester of Iowa State University was presented "The Director's Award" from the Midwest Agricultural Chemicals Association. Sylwester is in charge of extension weed control work in Iowa.

The Director's Award was presented for the first time this year to a member of the educational and research field. Sylwester was recognized for his "contribution to agriculture in the Midwest." Midwest."

Dr. Sylwester has completed 38 years of extension work and weed control in Iowa. Known throughout the state by thousands of farmers as "Dutch" his crusade against weeds and brush has helped reduce farmers' losses from weeds.

Author of numerous articles and pamphlets on all phases of cultural and chemical weed control, he is an outstanding authority in his field, he has been one of the key men in extension weed and pest control clinics held in Iowa since 1950.

The National Agricultural Marketing Association has formed a student chapter at Iowa State University.

The function of the ISU chapter will be to promote internship programs and friendships with students involved or interested in agricultural advertising, selling, marketing or public relations, by developing personal associations and contacts with professional ag marketers.

Scholarships for student NAMA members will become available as will opportunities for jobs. A resume file of student NAMA members will be available for those NAMA members looking for personnel. Likewise, NAMA will also alert student members when jobs become available.

Further information may be obtained from department bulletin boards or by contacting Bill Schafer or Rich Balvanz.

Ag College Adopts New Seal

The College of Agriculture at Iowa State now has an emblem to which students of agriculture may identify. with.

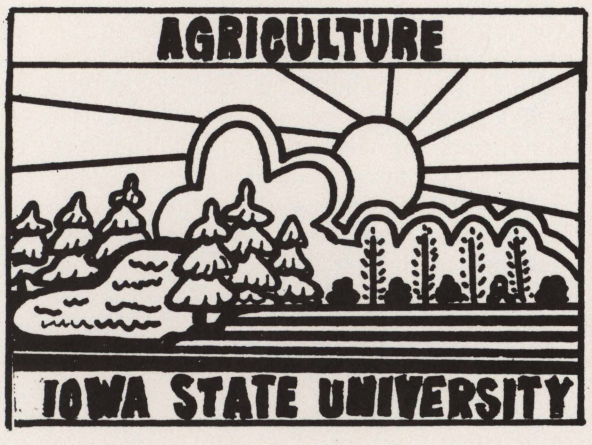
The new emblem, selected from 22 entries, was designed by Angie Walters, a junior majoring in Advertising Design from Eldora.

An emblem for the College of Agriculture was sought because until now, no official symbol had been established relating the whole field of agricultural studies. One function of the emblem will be to unify the College of Agriculture under one symbol.

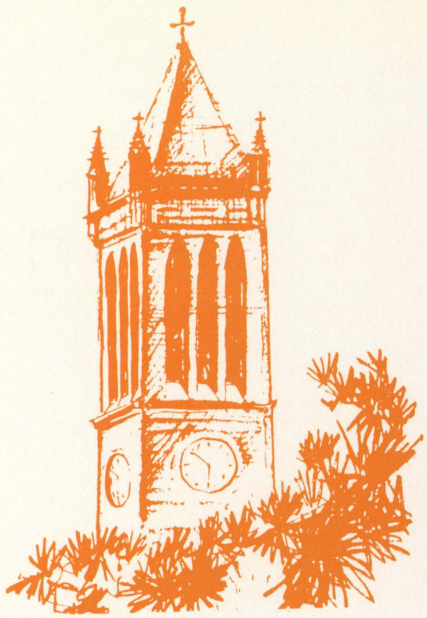
The new emblem design represents the harmony between agricultural crops, forests, and conservation. In the emblem itself, the fields and crops relate directly to agriculture. Conservation of resources and wildlife are depicted by the trees and lake with the sun and clouds uniting everything below them.

Three students from Ag Council, Dr. Lee Kolmer, dean of the College of Agriculture, and Dr. James Schwartz, head of the journalism department made the selection.

Among other uses, the new emblem will be placed on letterheads and stationery for the Ag Council and other departments in the College of Agriculture.



The College of Agriculture has adopted a new seal. The rough sketch as shown was submitted by Angie Walters.



Classroom & Campus

Farm Animal Birth Artificially Controlled

Research currently underway at Iowa State University is directed toward better ways of artificially controlling birth in farm animals. Hopefully the experiments will enable researchers to develop a birth stimulant causing a predictable and earlier birth.

Eventually the information obtained from the farm animals and their reaction to stimulant hormones could possibly be used in relation to human births. It's possible the hormones might stop a premature birth giving the fetus more time to develop.

So far the study reported by Dr. W. C. Wagner of ISU has mainly been conducted with cattle and sheep. Sheep have been used for natural births, and hormone levels during birth have been compared to artificially induced calving in cows.

Synthetic glucocorticoids are the artificial birth stimulants that have been used in the research.

Apparently estrogen hormones in the blood don't rise during a stimulated birth like they do in natural birth, Wagner reported. The estrogens in the blood contribute to relaxation of the reproductive tract and prepare the tract for birth.

This is the only hormone that doesn't respond during a stimulated birth as it does during a natural birth. Estrogen injections in the induced animal to make up for the lower estrogen level may be an answer to this problem.

ISU researchers have information supporting the fact that the fetus itself is the stimulant causing birth. Wagner said research at ISU indicates the fetus gives the go-ahead for birth, but researchers are now trying to find out what induces the decision.

Sometimes the fetus isn't properly formed and is unable to give the birth signal causing a prolonged pregnancy that may require surgery or other treatment to correct the problem.

Corn

(Continued from Page 7)

Another type of corn is waxy-high-oil. It combines the digestibility of waxy with the energy of high oil corn, said *Crops* magazine.

Crops indicated another advancement in the area of multiple-aleurone corn. The aleurone layer in common corn kernel is thin and has a high protein content, of approximately 22 per cent.

Researchers have just discovered that primitive Coroico corn from South America has an extra thick aleurone layer that varies between 35 and 38 per cent protein. This type of corn offers great promise but is still purely in the research stage said *Crops*.

With all the possibilities for corn in the future it may not be too long before many of these varieties or traits can be seen in commercial seed corn. Charles Glade, District Sales Manager for Moews Seed Company says that all seed corn companies are working on the sugary-2, opaque-2 and floury-2 genes. This would seem to indicate that these traits may soon be available in large quantities to the commercial corn producer.

The main factors that Glade sees as limiting the production of corn in the future besides genetics, are carbon dioxide, sunlight, management, the availability of fertilizer and moisture. Carbon dioxide would be limiting only at the extremely high plant populations when there would not be enough air movement through the dense canopy.

Sunlight may be limiting, but the proposed new shape of the corn plant may solve that problem. Management and fertilizer availability are not new, we are struggling with them now. Water will undoubtedly become a more important factor as populations increase, he added.

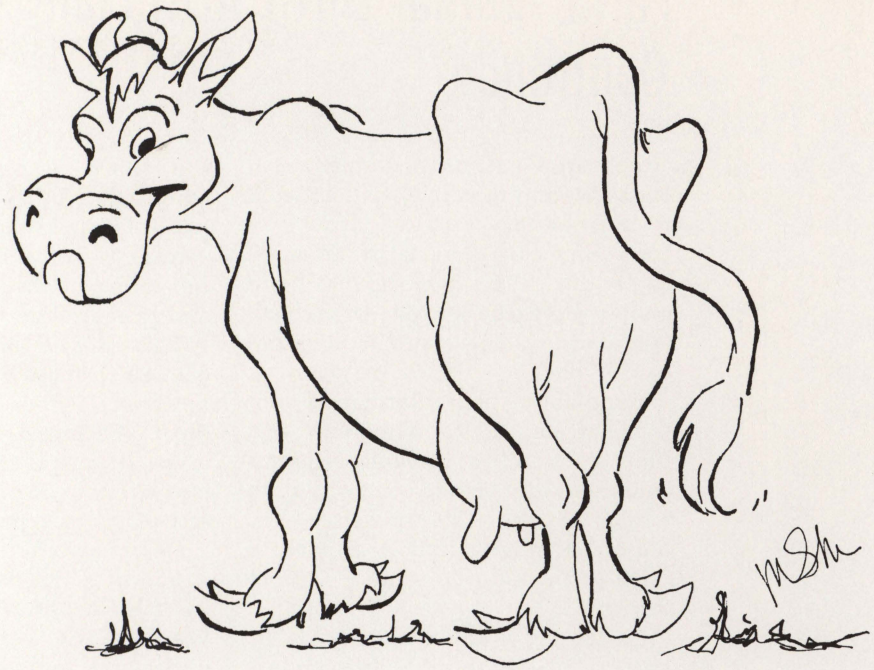
Glade sees many possible changes in the production of corn. "In previous years corn breeders selected for yield, disease resistance, and standability."

"In the future, corn will be selected for these traits plus amino acid levels, digestibility and other uses," he said. This type of selection will lead to an increase in corn grown for special purposes, added Glade.

Specialty corn, he said, would be corn grown with only one intention for its use, such as milling corn, livestock corn or corn for human consumption.

With such a wide variety of corn to choose from, the farmer of the future will "have to evaluate many of the different types himself, by on-the-farm-testing, to find the corn which suits his needs best," he said.

In summarizing his expectations of corn in the future, Glade said, "The major increase in corn in the years ahead may not be more corn, but in the value of the corn."



I Am Joe's Cow

by Jim Head

Of all Joe's* friends I am his favorite. One look into my big brown eyes and he melts like butter. Many call me hayburner, some call me bossy, you may call me cow.

I may not be much to look at with my spots and all, but you'd be surprised at the number of farmers I have to fight off. They just can't keep their hands off me. You know, it's grab, grab, grab. It's difficult for a respectable cow to maintain a decent reputation.

All things considered, I think I look pretty good after what I must go through. Eat grass, sit down, chew your cud, get milked, eat grass, sit down, chew your cud, get milked, eat grass. Over and over and over. It makes me sick to my stomachs.

Sometimes I get so wound up I have to kick something—anything. Fence, farmer, bucket, dog. If it's close I'll kick it.

I'm especially fond of kicking dogs because I hate them. Yap, yap, yap. No matter how many times you kick them in the head they always come back.

Farmers are a little easier to control, if all else fails you can always gore them.

I wouldn't gore Joe though, he's a pretty nice guy though sometimes he mishandles me. That's not just my opinion, I know that's what the udders feel also.

Male cows are called bulls. Bulls are an endangered species. Just the other day I heard Joe talking about the amount of bull shot in the Washington area and how high they were piling them.

I wish Joe would mind his own business and stop setting me up with strange bulls. I never have a good time, but they always seem to get a bang out of it.

It's boring being a cow. Sure you can always step on a cat or two, but after a while it's pathetic watching crippled cats.

All that's left is to chew my cud. BLAH! Expecting hay to taste good the second time around is asking too much. It's all wet and mushy. I hate my cud.

Maybe I'll stand under a tree for a while or perhaps stand by a road and look cool. I could lick my hip or just lay down and rest.

Towards evening I think I'll mosey up to the farmhouse and moo. Cows lead such exciting lives.

*Joe, 47, is a typical American farmer. A number of his pets have told their stories in *The Breeder's Digest.*

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